



Northwest Fisheries Science Center

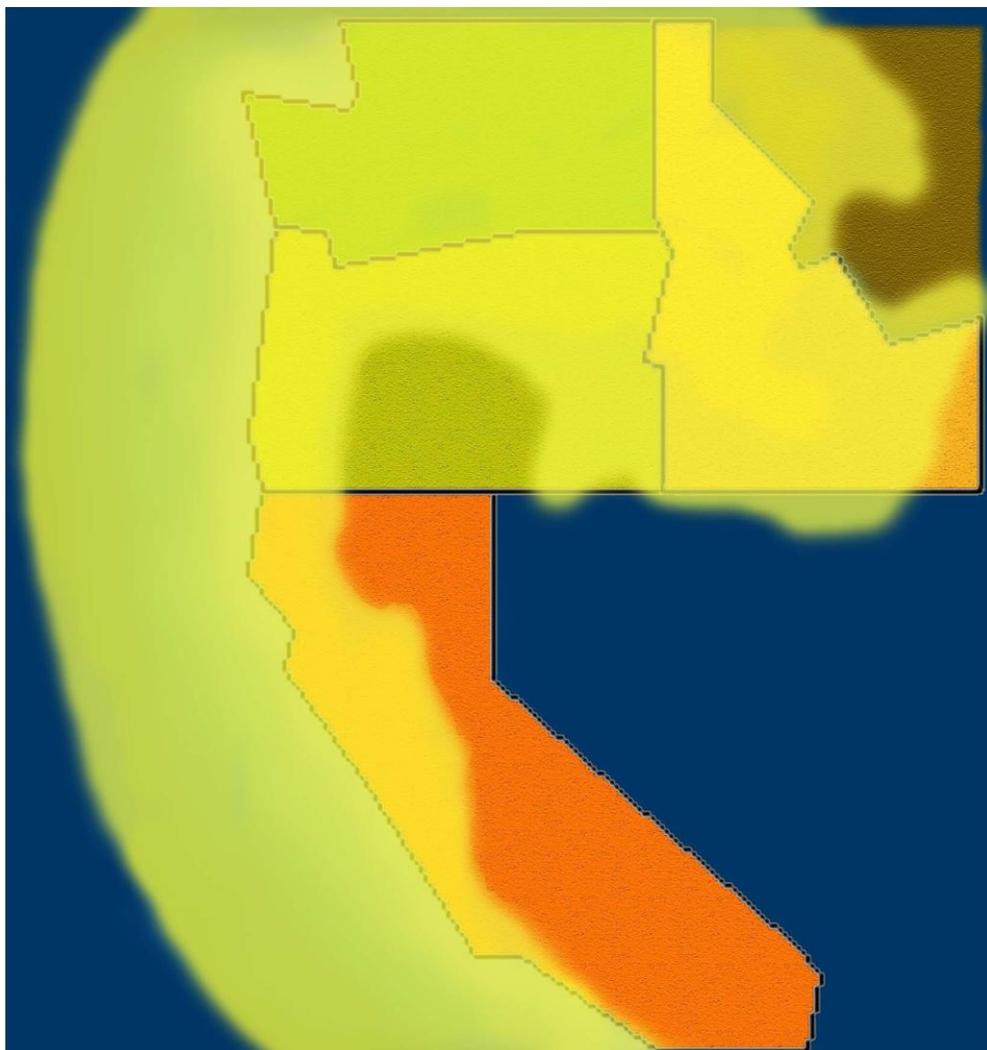
Overview

John Stein

Science and Research Director



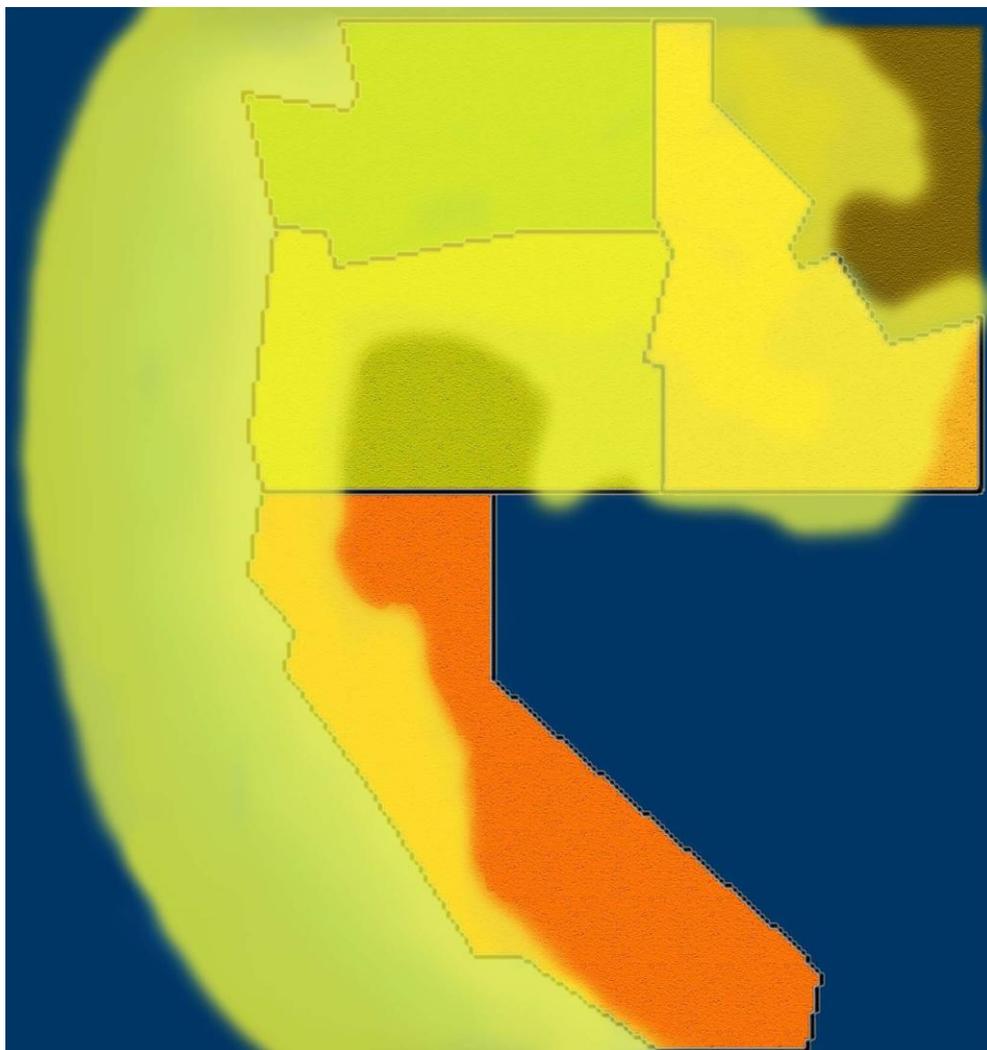
NWFSC Strategic Science Plan - Themes



- *Sustainable, Safe and Secure Seafood for Healthy Populations and Vibrant Communities*
- *Ecosystem Approach to Improve Management of Marine Resources*
- *Recovery and Rebuilding of Marine and Coastal Species*
- *Habitats to Support Sustainable Fisheries and Recovered Populations*



NWFSC Science



- *West Coast Groundfish*
- *Pacific Salmon*
- *Southern Resident Killer Whales*
- *IEA*
- *Aquaculture*
- *Ocean Acidification*



OA Experimental Results



Dungeness Crab: Lower Survival from Megalopae to 1st Instar)



Pacific Oyster: Smaller size at high CO₂ in 1st two days of development



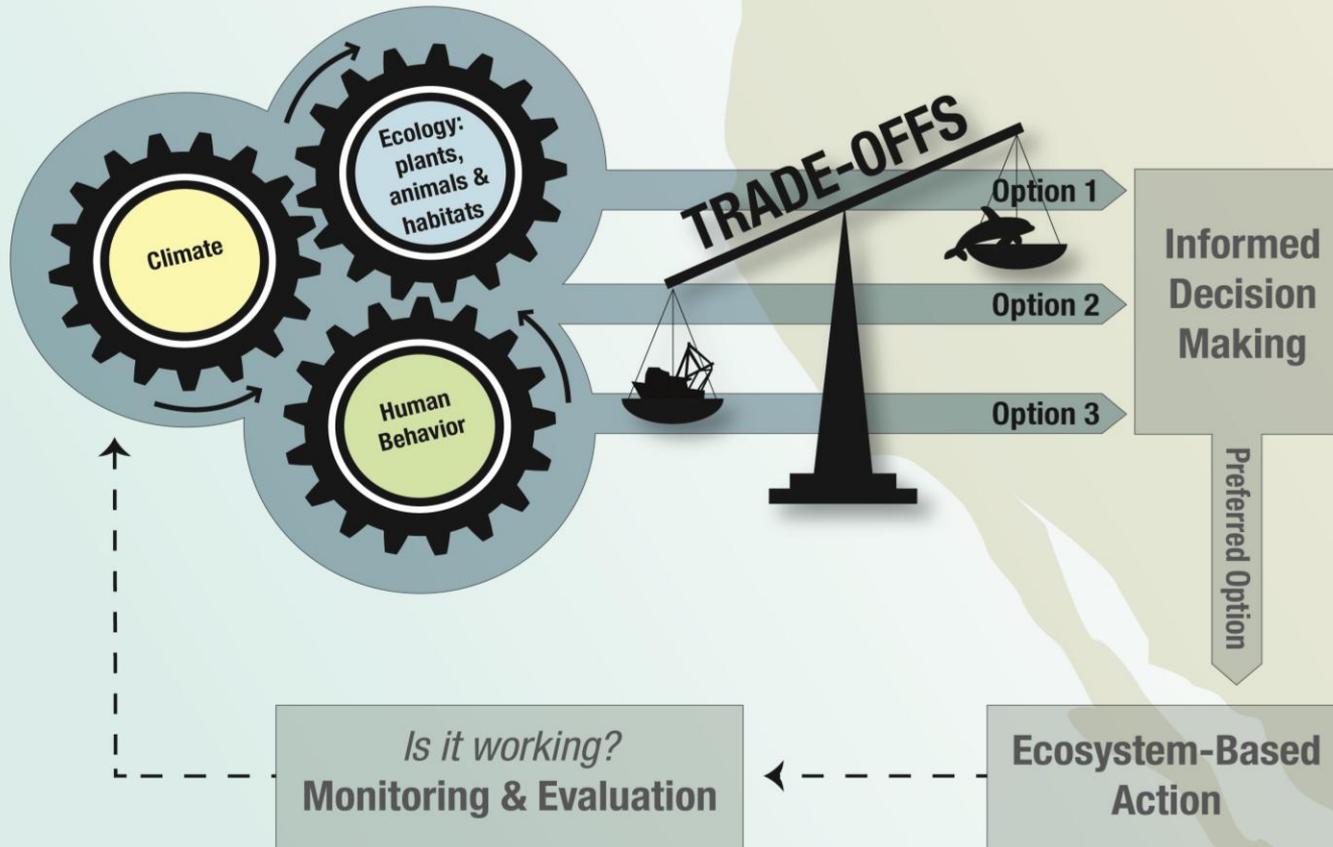
Surf Smelt: Higher survival with high CO₂



IEA – Significant Effort



Many management sectors simultaneously look at the system and what drives it. The goal is to minimize ecosystem impacts and maximize societal benefits.





Where Has the NOAA Framework Been Adopted



- Fisheries Management Councils

- North Sea

- P

-

-

“ The Council is encouraged by the preliminary results and recommends continued coordination ... to further explore ways of bringing IEA products into stock assessments and Council decision making.”
- PFMC Decision Document, Nov. 2011

Aquaculture



Restoration Shellfish Hatchery



Washington Shellfish Initiative

Tiger team proposal -- construct hatchery to provide 1+ million restoration grade Olympia oyster seed to plant 50 acres of Puget Sound

Operational staff from Puget Sound Restoration fund



Additional Research

Pinto abalone restoration at Mukilteo lab (UW and PSRF)

Future research -- Genetics and local adaptation of Olympia oyster

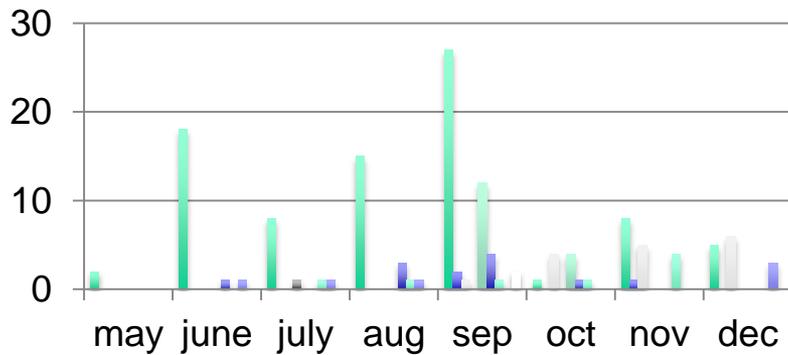


Future hatchery site

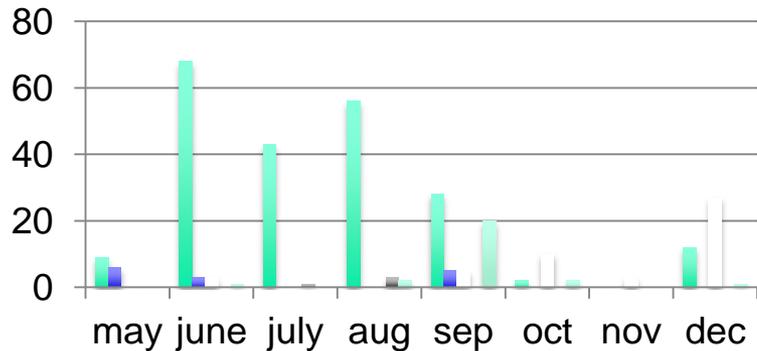
Southern Resident Killer Whales



Comparison of diets determined from fecal samples and prey remains (scales and tissue)

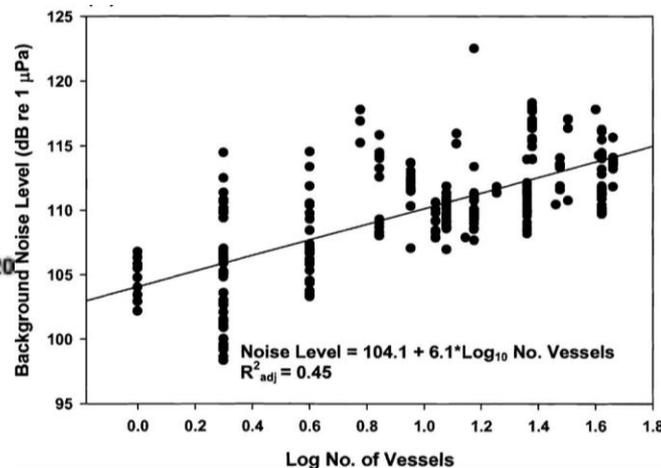
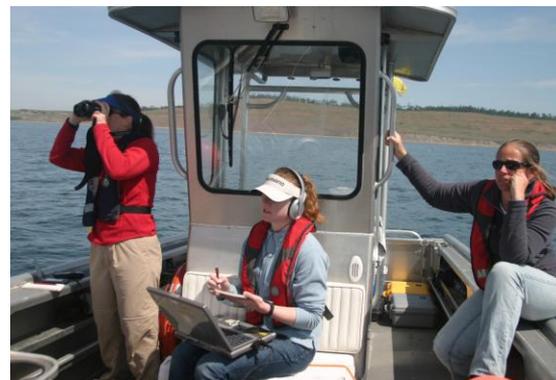
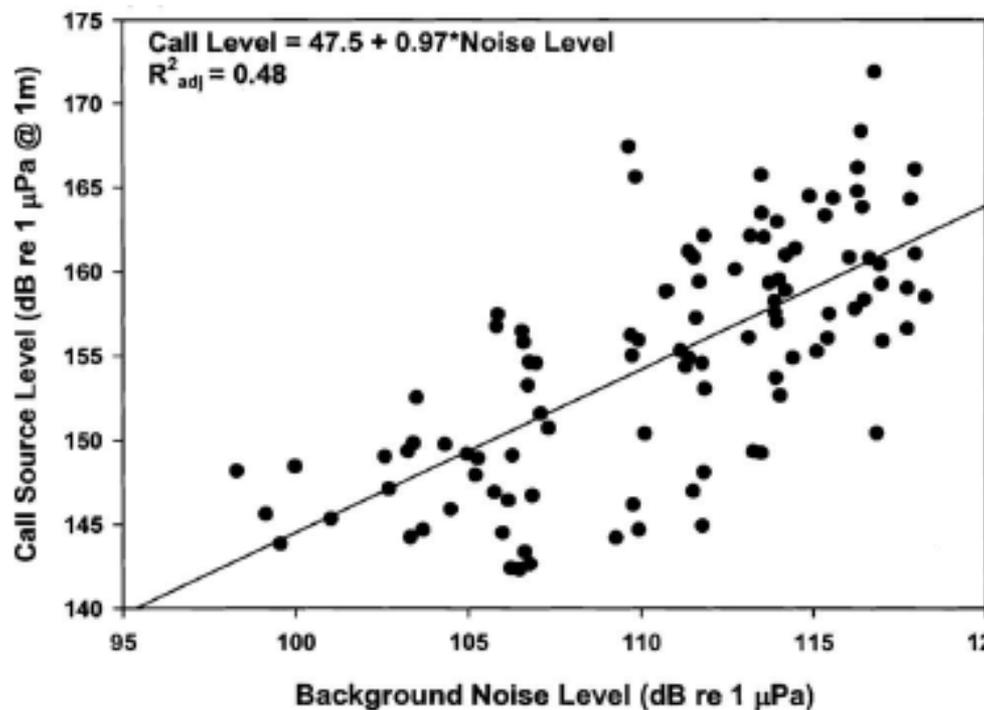


Fecal samples – species occurrence



Tissue/scale samples

Do increases in noise change whale behavior?



SRKW call source levels increase with increasing ambient noise

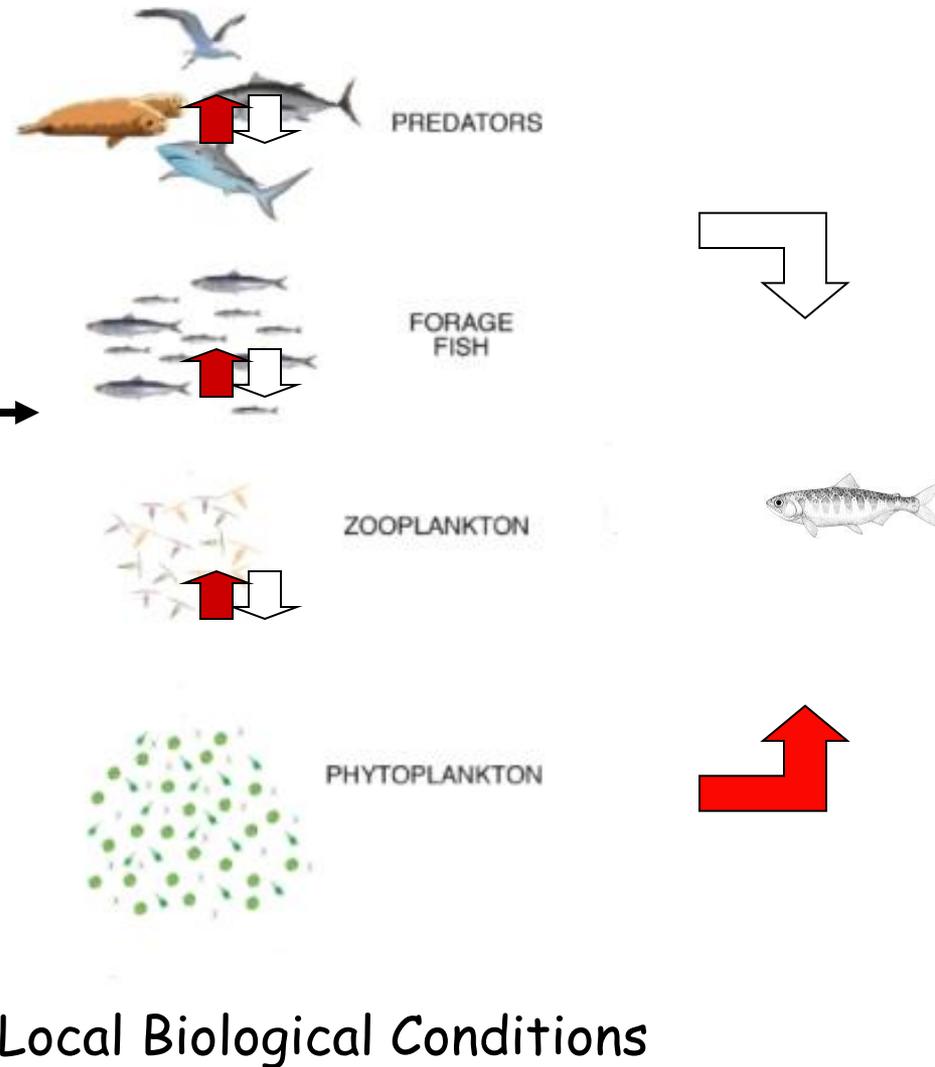
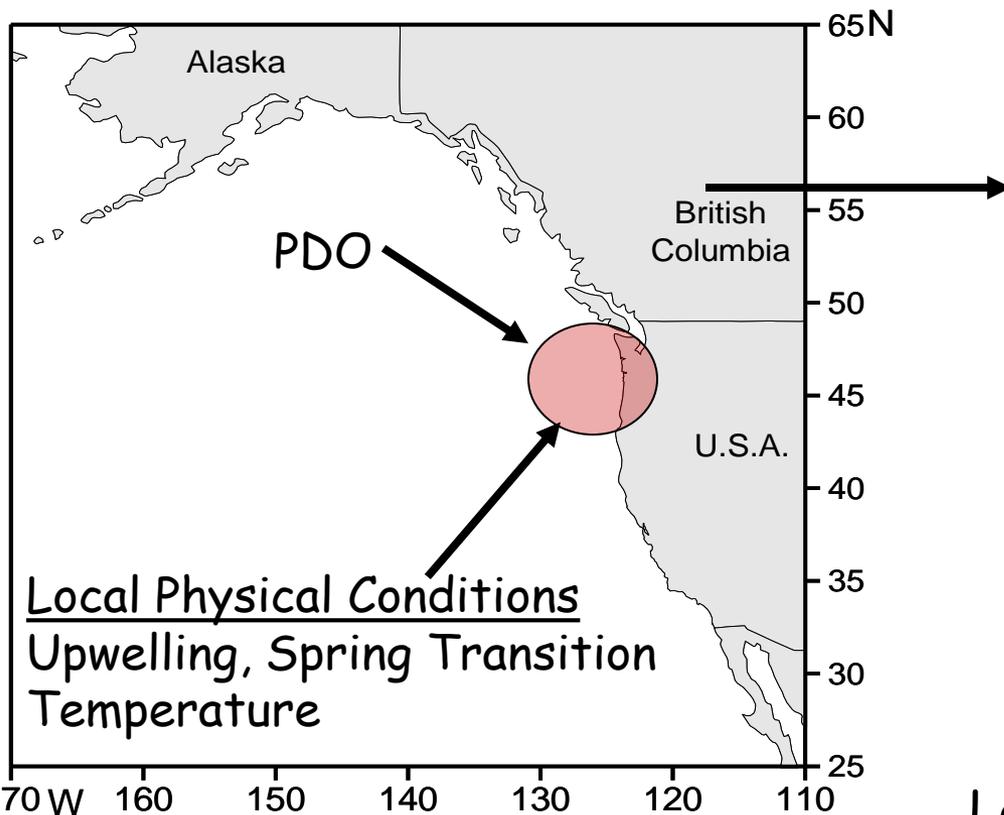
Pacific Salmon



Projecting Ocean Survival of Pacific salmon

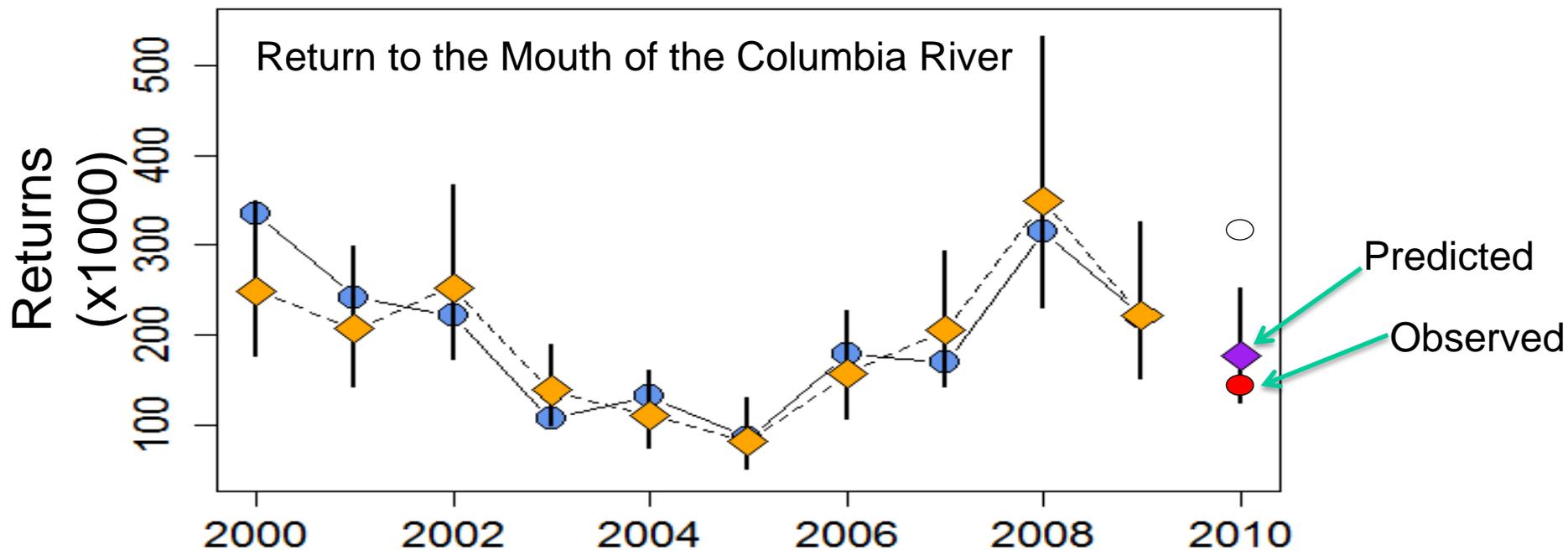


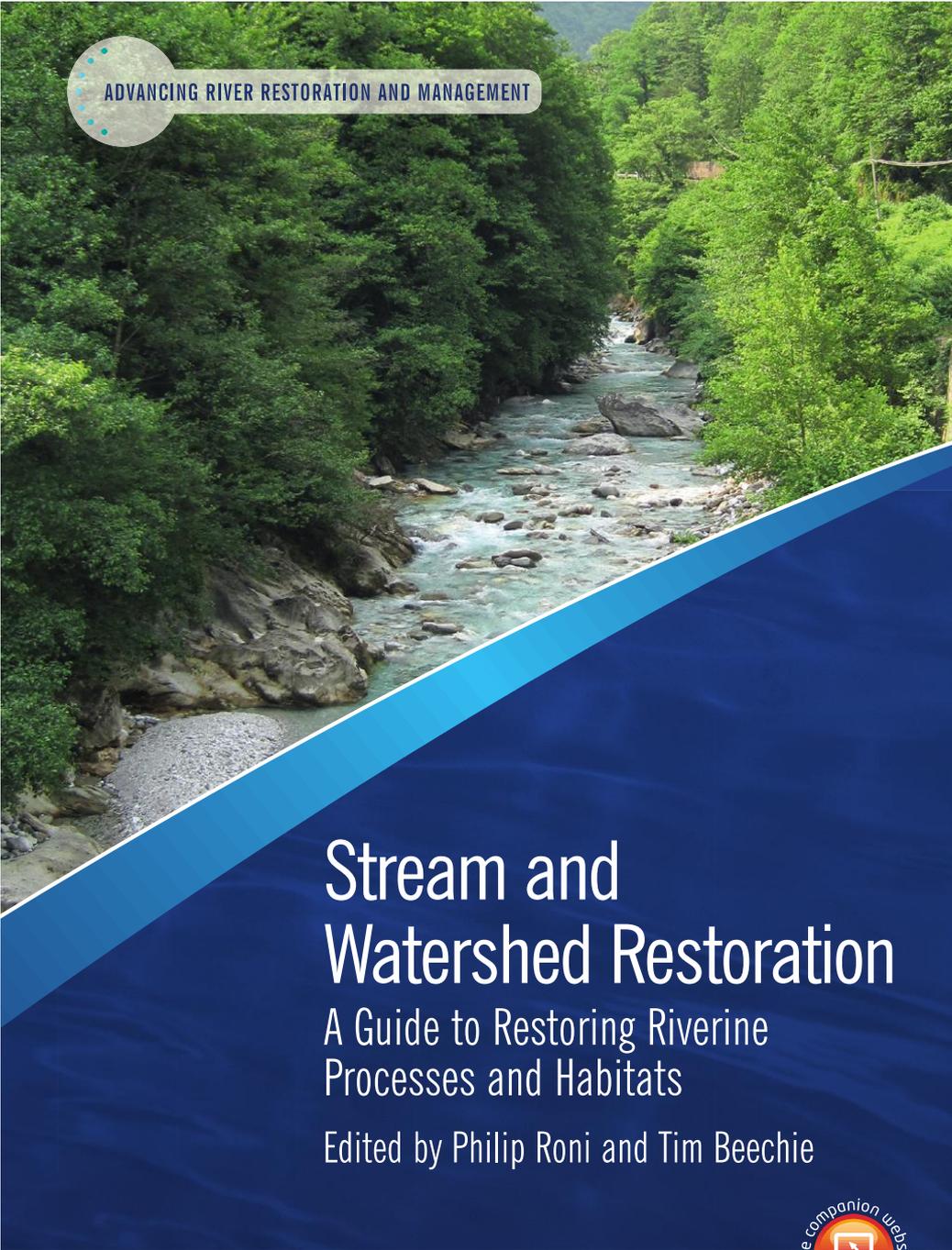
Large scale forces acting at the local scale influence biological process important for salmon





Ocean Survival Model for Spring Chinook





ADVANCING RIVER RESTORATION AND MANAGEMENT

Stream and Watershed Restoration

A Guide to Restoring Riverine
Processes and Habitats

Edited by Philip Roni and Tim Beechie



Watershed Ecology Research

Physical Habitat Quality

And

Chemical Habitat Quality

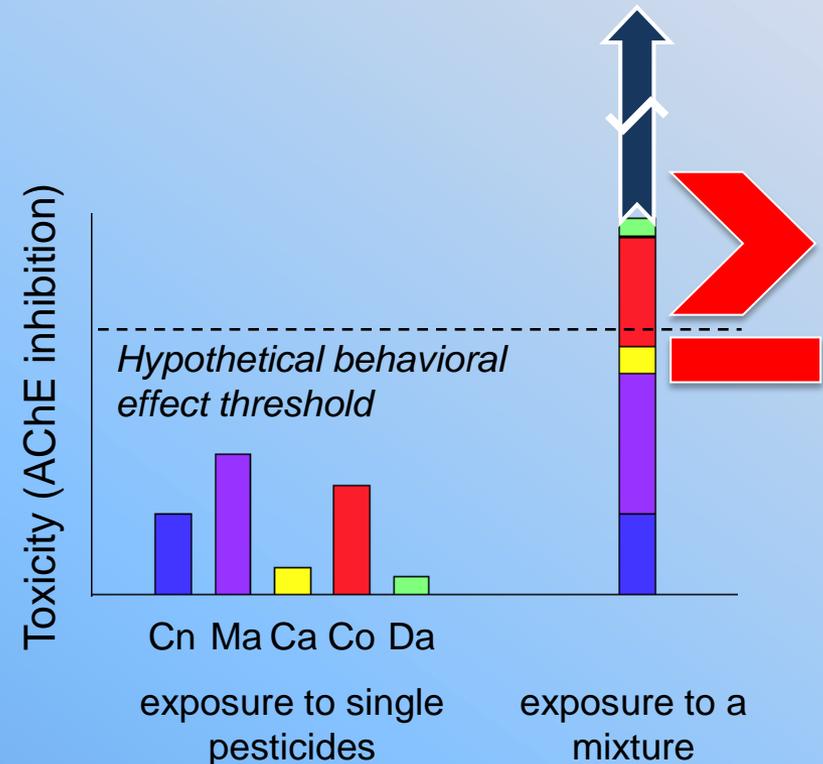
The Synergistic Toxicity of Pesticide Mixtures: Implications for Risk Assessment and the Conservation of Endangered Pacific Salmon

Cathy A. Laetz,¹ David H. Baldwin,¹ Tracy K. Collier,¹ Vincent Hebert,² John D. Stark,³ and Nathaniel L. Scholz¹

¹NOAA (National Oceanic and Atmospheric Administration) Fisheries, Northwest Fisheries Science Center, Seattle, Washington, USA; ²Food and Environmental Quality Laboratory, Washington State University, Richland, Washington, USA; ³Department of Entomology, Ecotoxicology Program, Washington State University, Puyallup, Washington, USA

Environmental Health Perspectives, March 2009

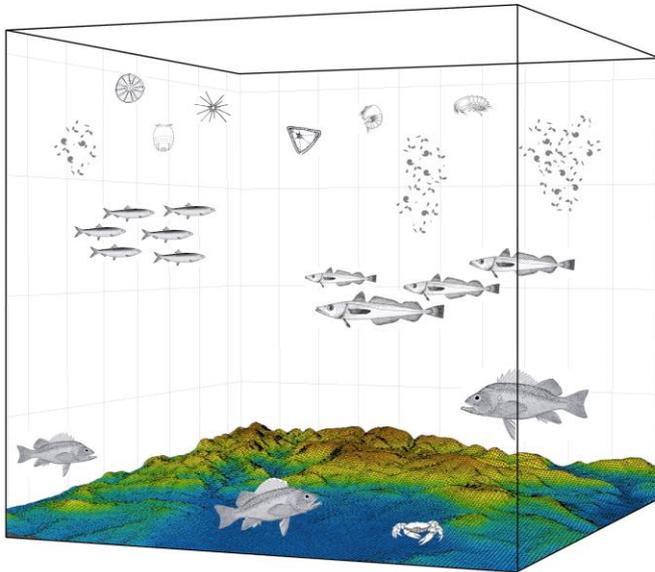
- Common organophosphate and carbamate insecticides interact in binary mixtures to greatly enhance toxicity to juvenile coho salmon.
- NOAA has repeated and extended the 2009 EHP study to lower exposure concentrations for mixtures of diazinon, malathion, and ethoprop.



West Coast Groundfish



California Current Surveys – Meet Fishery Independent Survey Needs while Moving to Ecosystem Surveys



- Acoustic Hake Survey
- Coast-wide Bottom Trawl
- Cooperative Hook and Line
- Juvenile rockfish
- Hypoxia
- *Hake and sardine – the future?*



Public Engagement Approach



INFORM

INVITE

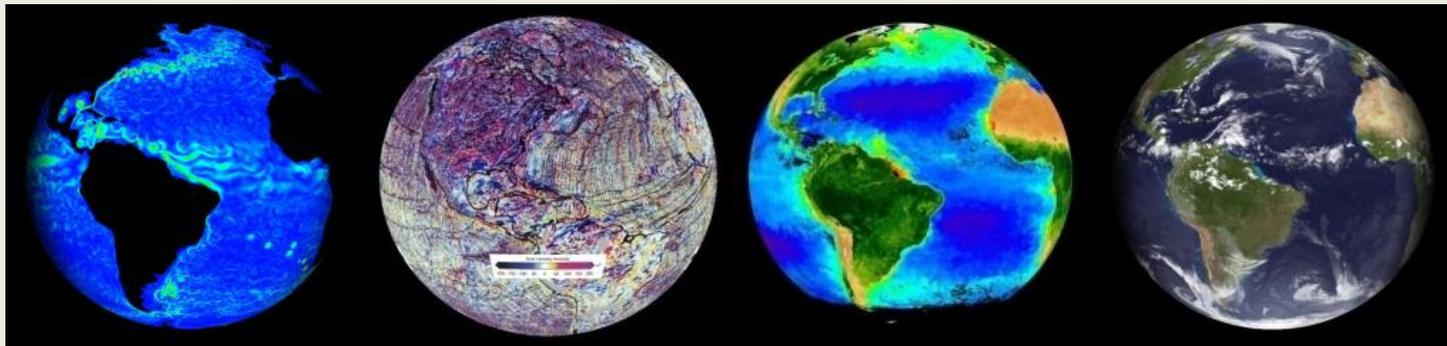
INSPIRE

Inform



EXPO DAY (June 2): Forget the trade show approach of pitching programs. The public doesn't care about our Line Office structure. Let's talk about our science, service and stewardship mission in an integrated way; in the context of Earth System Science.

Science, Service, Stewardship



Hydrosphere

Lithosphere

Biosphere

Atmosphere

Quick Stats:

- Interactive “hands-on” activities. No program “pitches” or paper
- 29 cross-NOAA volunteers
- ~ 4,000 public visits (20,000 total festival estimate)

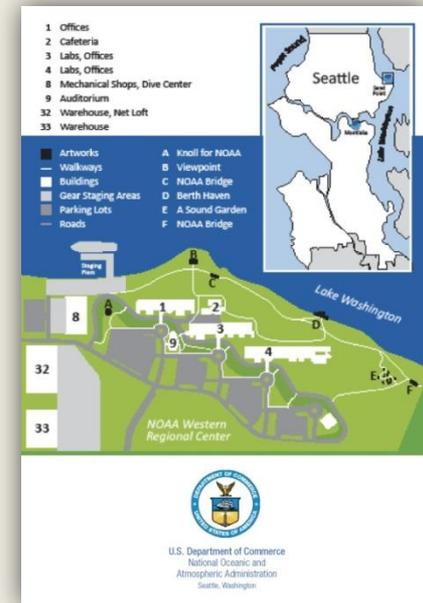
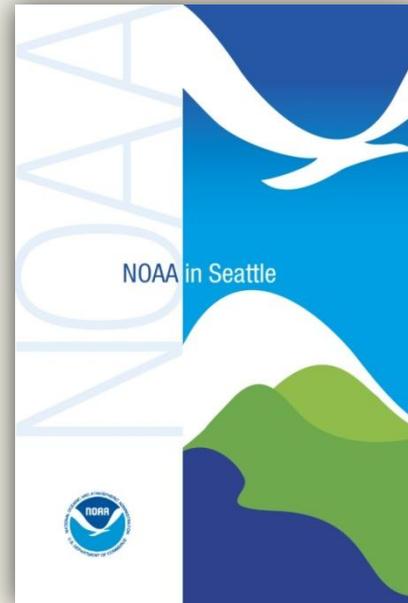
Invite



NOAA OPEN HOUSE (June 8): Naysayers said it couldn't be done - no precedent, too much red tape, too hard to coordinate. Yes, it is a bit of work, but how can we expect the public to care about our house, when we never invite them over to see it?

Quick Stats:

- Over 600 members of the public attended, including elected officials & staffs
- All program tours filled up; strong public demand
- 135 NOAA volunteers from all NOAA Staff and Program Offices
- 5 NOAA Partner organizations included



Public Feedback:

- 110 surveys received; Over 90% positive
- ¼ of respondents asked us to make this an annual event. ***“Please do again!”***

